



## PIEZOELECTRIC VIBRATION SENSOR

### BACKGROUND OF THE INVENTION

The present invention relates in general to sensing of mechanical vibrations, possibly in the form of sound or ultrasound, by means of one or several sensor units having a piezoelectric foil as a signal-delivering element. More particularly, the invention relates to a sensor unit for picking up mechanical vibrations, sound, and ultrasound. In further aspects, the invention relates to a vibration detector array with a plurality of sensor units. Finally, the invention relates to uses of such vibration detector arrays.

Particularly within the art of auscultation, i.e. the art concerning listening for sounds generated in living bodies, for instance heart sounds, many different sensor types have been developed for use by e.g. a doctor, for examination purposes. In this connection, reference is made to previous patent publications regarding auscultation and sensor technology belonging to the owner of rights to the present invention, see for instance Norwegian patents 300250, 304870 and 306926. The present invention is primarily directed to this type of examination, and aims particularly at being able to prepare a mapping of an area in a living body on the basis of a matrix investigation. In other words, sound/vibration picked up by plural sensors, is converted to separate signals to be led into a computer that provides systematizing of the sound/ultrasound image in order to prepare a composite mapping of the sound that is received from a large area, for instance an area of the back of a person, or a chest area.

But, in addition to the above, there are also industrial areas of use. For instance, it is possible to undertake a vibration analysis of underlying structures by means of a sensor matrix laid down on a metal surface of a machine construction or similar device.

However, the invention does not concern signal processing or algorithms in connection therewith, but deals with special sensor elements intended to be included in larger sensor groups or arrays, possibly sensor matrices, and the composition of such sensor groups.

### SUMMARY OF THE INVENTION

Hence, in a first aspect of the present invention, there is provided a sensor unit for picking up mechanical vibrations, sound and ultrasound, having at least one piezoelectric foil strip (piezo strip) as a sensor element. The piezo strip has signal wires attached for exporting electric

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